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# NEWSLETTER

National Clonal Germplasm Repository  
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Kim E. Hummer, Curator

November 1988

## New Accessions

NCGR-Corvallis has acquired 408 additional accessions in 1988 thus far. This includes about 30 virus-negative replacements produced by our virus-testing program.

In *Corylus* we received 'Wanless Pride' from Richard Salt in Australia.

We continue to request many *Corylus* cultivars and selections from Turkey, Italy, and Spain in conjunction with the *Corylus* breeding program at Oregon State University.

We received several seed lots of *Humulus japonica* from Tug Fork New York, collected by Dr. R. Hampton, OSU Department of Botany and Plant Pathology.

We received several selections of "ultra-hardy" strawberry from Dr. Hugh Daubney, Vancouver, Canada. These selections are from Agricultural Canada Research Station, Beaverlodge, Alta, Canada. These cultivars are 'Protom', 'Beaver Early', 'Beaver Sweet', 'Beaver Ruby', and 'Beaver Belle'.

In *Rubus* we received 5 cultivars of *R. arcticus* subsp. *stellarecticus* from Sweden. We also now have 5 hardy blackberry selections from the original Wyoming Experiment Station collection. These were provided by Dr. Francis Lawrence.

Many pear cultivars were provided by The California Rare Fruit Growers. We're very happy to be exchanging plant material with them.

We obtained an everblooming Hawthorn cultivar called 'Glastonbury Thorn' from Peter Machlachlan, the gardener at the National Cathedral, in Washington, D.C. This cultivar has a history dating to biblical times. We're excited about the successful propagation of this plant.

We look forward to coordinating with cranberry researchers throughout the country and broadening the cranberry collection here at the repository. We will be acquiring additional

cultivars from the Cranberry and Blueberry Research Station in New Jersey and storing material that has been verified taxonomically.

We have received several wonderful letters from Maxine Thompson who is collecting plants for the National Plant Germplasm System from Pakistan. She has described the beautiful scenery and difficult cultural conditions. She has obtained seed of the following species for our repository:

1. *Fragaria nubicola*, from 5 collection sites.
2. *Duchesnea indica*, from 2 collection sites.
3. *Rubus hoffmeisterianus*, from 8 sites.
4. *Rubus niveus*, from 5 collection sites.
5. *Rubus ellipticus*, from 2 collection sites.
6. *Rubus macilensis*, from 2 collection sites.
7. *Ribes orientale*, from 3 collection sites.
8. *Corylus jacquemontii*

We look forward to her return in December and hearing a complete account of her trip.

## Staffing Changes

The staff at the NCGR - Corvallis continues to change. Dr. Norman James has been appointed to the position of National Program Leader for Special Projects - Plant Germplasm. His initial assignment will be to survey plant breeding projects within the USDA and state experiment stations to determine those that were recently terminated, those that may be terminated in the near future, and those in jeopardy because of impending retirement. He will be especially interested in determining the value and disposition of the germplasm resources associated with these programs and suggest ways to retain valuable genetic resources when breeding programs are terminated. Dr. James will be researching breeder needs to recommend improvements in the National Plant Germplasm System (NPGS) and will be stationed at NCGR - Corvallis.

At the end of June 1988, BJ Rebuhn, our *in vitro* culture technician left the repository to

assume a position in the Forestry Science Department at Oregon State University.

Our *in vitro* technician position is presently unfilled pending personnel action. Dr. Barbara Reed, our cryopreservation researcher has graciously assumed the duties of maintaining our *in vitro* plant collection in addition to her regular assignment. However, until a replacement is hired, *in vitro* plants will not be available for distribution.

In September 1988, Dr. Henrietta Chambers assumed a part-time assignment to assist in curating the *Mentha* collection. NCGR-Corvallis is fortunate to have Dr. Chambers' excellent assistance in this endeavor. She generously donated 41 *Panaxanthum* accessions from her collection to the repository.

Our secretary Phyllis Benoist left the repository in August and has been replaced by Mrs. Mickey Hooton. We appreciate Phyllis's efforts and welcome Mickey to our staff.

## NCGR Staff

Dr. Mel Couey, Research Leader

Dr. Kim Hummer, Curator

Dr. Francis Lawrence, Small Fruits

Dr. Henrietta Chambers, *Mentha*

Jim Chandler, Technician

Donna Gerten, Information Manager

Mickey Hooton, Secretary

Joseph Postman, Plant Pathologist

Dr. Barbara Reed, Cryopreservation

Patricia Robbins, Plant Propagation

Joe Snead, Field Manager

Dr. Norman James, NPGS-Special

Dr. Harry Lagerstedt, Collaborator

Dr. Mel Westwood, Collaborator

## Catalog of Accessions

We have just finished our 1988 Catalog of Accessions. In this year's edition we have divided each genus into crop types. We have

## *Pyrus* Disease Data

by Joseph Postman

Observation data from 1986 to 1988 for pest resistance in the *Pyrus* collection has been computerized and summarized. Information has been collected on the incidence of the following insect and disease pests:

Blossom and twig blight

(*Pseudomonas syringae*)

Fruit and leaf scab (*Venturia pyrina*)

Powdery mildew (*Podosphaera leucotricha*)

Rust (*Gymnosporangium* sp.)

Blister Mite (*Eriophyes pyri*)

Powdery mildew and rust have only rarely been seen in our field planting. Leaf scab has not been as prominent as fruit scab. The spring of 1988 was long, cool, and wet, resulting in the widespread occurrence of *Pyseudomonas* blossom blight. There was a striking range of

susceptibility to blossom blight with 100% of the blossoms killed on some trees, and none on other trees. The occurrence of blister mite during 1986 and 1987 was also widespread, and differences in susceptibility were apparent. Over 2600 trees were rated for each of these pests on a scale of 1 to 9 (1 indicates no disease, 9 is the most severe case). This data, and all other evaluation data, will be added to the national GRIN database, where it is available to the public.

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also added origin information, and virus status. Please write if you would like to obtain a copy.

## ***Mentha* Collection**

by Henrietta Chambers

Besides the temperate small fruits, pears and hazelnuts the NCGR-Corvallis houses the mint collection for the USDA/ARS. The major portion of the *Mentha* collection, 490 plant accessions, was received in 1983. USDA researchers housed at Oregon State University donated this collection when the USDA mint breeding program was terminated. More than half of the clones were from Merritt J. Murray of the A. M. Todd Company, Kalamazoo, Michigan. Dr. Murray, a *Mentha* breeder of international reputation, collected and received *Mentha* species from all over the world. Some accessions were donated by Dr. Tucker of Delaware State University. The repository was extremely fortunate to receive clones from these world collections.

Additional seed and clonal collections received since 1983 bring the accessions total to 543. Among these are selections received from Dr. Renkin at the Experimental Gardens in the Democratic Republic of Germany. The repository collection has representatives from more than half of the species of the genus worldwide. The collection centers on Section *Mentha* (according to the taxonomic treatment in Flora Europea) which is mainly the European species and hybrids of commercial importance.

Dr. Chambers has established correspondence with *Mentha* researchers and cooperators to complete gaps in the data collection records on current accessions. In addition, she, with the help of student workers, is making a dried pressed voucher specimen for each accession, fixing buds for future cytological examination, and expanding and updating the mint reprint collection for the repository literature file. She is conferring with mint taxonomists to correct entries of the mint collection in the GRIN records. She is examining information and pedigrees to target duplicate germplasm for removal from the collection.

We are very happy to have Dr. Chambers on our staff and encourage those with interest in *Mentha* to correspond with her at our facility.

## **Publications**

Postman, J. and Hummer, K., 1988. Virus Tested pear germplasm available at the National Clonal Germplasm Repository in Corvallis, Oregon. *Fruit Varieties Journal* 42:109-115

Reed, B.M., 1988. Survival of *in vitro* cultured *Pyrus* species frozen to -196C *Plant Physiol.* 86(4):52 (Abst).

Reed, B.M., 1988. Cold Acclimation as a method to improve survival of cryopreserved *Rubus* meristems. *CryoLetters*. 9:116-171.

## ***In Vitro***

by Barbara Reed

Since the departure of BJ Rebuhn, Dr. Barbara Reed has taken over some of the *in vitro* research and collection maintenance. She and student assistants have improved the culture media for *Vaccinium* so that 90 additional clones could be added to the *in vitro* collection. Work is continuing to find a suitable medium for the wide range of *Vaccinium* species.

About 200 *Rubus* clones were added to the *in vitro* collection this summer and are being prepared for cold storage at this time.

All of the *in vitro* cold storage collection will be evaluated this winter and at 3 to 4 month intervals thereafter to determine which clones are not well suited to cold storage.

## **Cryopreservation**

by Barbara Reed

These past several months, Cryopreservation research at NCGR-Corvallis examined techniques to store *Pyrus* and *Vaccinium* meristems in liquid nitrogen temperatures.

A recently completed study examined four *Pyrus* species to compare cold hardening pretreatment with the usual procedure of freezing directly out of a growth environment. A cold hardening pretreatment for the meristems significantly increased survival.

Initial freezing studies were begun on *Vaccinium* meristems. Meristems for one *V. corymbosum* clones had very high (95%) survival rates after emersion in liquid nitrogen. Survival of Meristems of two other species (*V. ovatum* and *V. uliginosum*) was very low. This work will be continued.

The National Seed Storage Laboratory,

working with NCGR-Geneva, is examining techniques to store dormant apple buds at liquid nitrogen temperatures. We will examine dormant buds of pear and filberts (hazelnut) during the approaching winter season.

## **Germplasm Distribution**

by Patricia Robbins and Kim Hummer

As of the end of October NCGR-Corvallis had 174 plant requests in 1988. For these requests we have distributed 937 accessions to 22 foreign countries and 31 states within the United States. Foreign distribution accounted for about 25% of the total. About 50% of the requests were for the small fruit genera, 30% for *Pyrus*, and 5% for *Corylus*.

## **GRIN**

by Donna Gerten

Our computer activity has flourished since Donna Gerten joined our staff. Accession records for *Ribes*, *Fragaria*, and *Corylus* were updated. Inventory records for all accessions were updated in August and September. The next update will occur in December and January.

Approximately 10,000 observation records for Corvallis' accessions were loaded between August and October. *Ribes*, *Fragaria*, and *Corylus* data taken at Corvallis from 1985 to 1988 were entered. These data can be viewed through Public on the GRIN system through improved programming efforts by the DBMU team.

Order processing continues primarily through written correspondence to the repository outside of the GRIN system. We are thus bulk loading our processed orders into the GRIN system from workfiles on our computer system.

Donna Gerten, our information manager, spent the week of November 1 through the 5th in Beltsville, MD working with the DBMU team. She was instructed on the new enhanced GRIN software and, in turn, taught the DBMU how to "Drain" their new PC's.

## **Field Collections**

by Joe Snead

These last few seasons have been a time of change for the repository field collections. As



reported earlier, the *Ribes* collection was moved last winter. The plants took the transplant very well. We were able to do many fruit and pest evaluations.

The *Rubus* field collection has changed substantially. All the raspberry type, species and varieties have been repropagated and planted in a new section of the field as part of a rotation plan. The new section has better spacing for maintaining individual accessions and a different trellis, and watering system. Bird netting will also cover them during fruit season.

We have replaced the turf aisles with sawdust in the *Vaccinium* collection. Considerable initial irrigation was required to wet the sawdust. The plants are now responding with better growth.

A new *Fragaria* collection was established this summer. This is the third rotation of this crop. For this planting we had the soil tarpred and fumigated with Methyl Bromide and Chloropicrin.

There was enough ground treated to put in a nursery area and an experimental planting of *Lesquerella* and *Limnanthes*. The experimental planting was in cooperation with the USDA Regional Plant Introduction Station at Pullman, Washington.

Our *Corylus* collection has changed also. In an effort to make room for additional accessions in the years to come we are keeping only one tree of each accession. The second tree has been cut back and will be used as a layerage bed. This will enable us to send rooted layers for plant requests.

We will be establishing a field collection of cranberries. This collection will have a frost protection system for use during bloom time.

Oregon State University, Department of Horticulture has granted us use of about two additional acres. Minor genera, such as *Cydonia*, *Sorbus*, *Amelanchier*, *Sambucus*, and others, will be planted on a one acre parcel of land. The other acre will become available to us within several years.

## Symposia

Two symposia will be visiting the repository in 1989. On June 30, 1989, the 5th International Rubus/Ribes Symposium will be visiting the Repository and touring the collections. More information can be obtained by contacting:

Dr. Hugh Daubney, Agriculture Canada Research Station, 6660 N.W. Marine Drive, Vancouver, BC V6T 1X2, CANADA.

On September 20-23, 1989 the North American Cranberry Research and Extension Workers will be meeting in the Pacific Northwest. The NCGR-Corvallis will be one of the stops on the tour. More information can be obtained from Arthur Poole, Extension Service, Coos County, Coquille Annex, 290 N. Central, Coquille, OR 97423.

## Pyrus Fruit Data

by Joseph Postman

A number of fruit measurements, and descriptive evaluations have been recorded as ripe fruit is harvested. Although fruit weight, length, width, and pedicel length will vary tremendously according to crop load and environment, ratios of these values are much more stable. Ratios such as fruit length/width, pedicel length/fruit length, fruit length/weight etc. may be used to characterize individual cultivars or clones.

Fruit photographs of all pear accessions are being taken to document fruit shape, color, and internal features. The fruit photographs and measurements are being combined with the phenology data and compared with published descriptions to verify the identities of pear accessions. A number of duplicate and misidentified trees have been flagged for elimination. Elimination of redundant and mislabeled

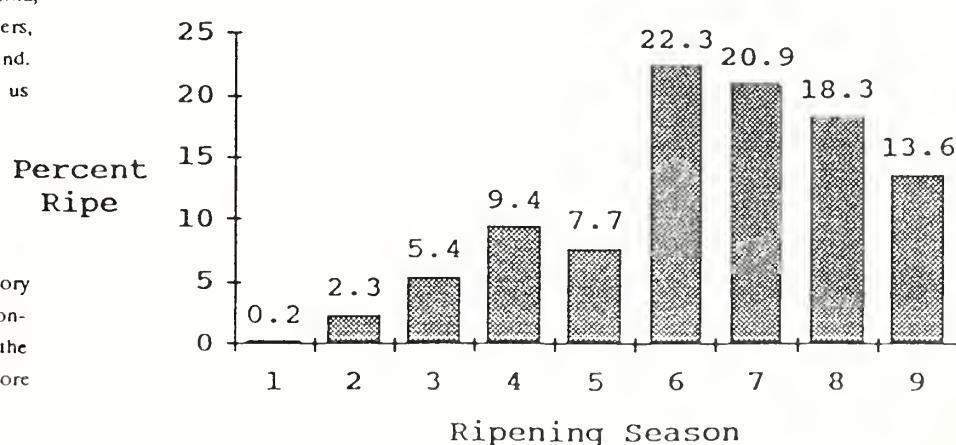
accessions improves the usefulness of the collection, and stretches our limited resources.

## Pyrus Phenology Data

by Joseph Postman

For the last several years, first bloom, full bloom, and last bloom dates have been recorded for each tree in the NCGR pear orchard. Fruit ripening dates were also recorded for tree ripened fruit, as determined by subjective evaluation of softening, ground color development, ease of abscission, and darkening of seeds. During 1987, full bloom occurred from about March 20 to April 25. The difference between the earliest and the latest full bloom was only about a month. The ripening sequence spanned a much greater time period. The earliest ripening accessions in 1987 were fully ripe at the end of June, and by the first of November, there were still many varieties that had not ripened on the tree. By calculating the days between full bloom and harvest, the time required to ripen fruit ranged from 66 days to over 200 days. Ironically the earliest blooming pear, a low chilling Asian pear called 'Naspati' from Nepal, was also one of the latest ripening, requiring 216 days from full bloom to harvest! Tremendous genetic diversity is obvious in this collection. The period from June 1 to November 1 has been divided into 9 equal periods or seasons, and the number of pear accessions ripening during each season is presented in the chart below for 1987 data. This data includes both wild pear species and edible cultivars.

NCGR Pear Harvest Distribution - 1987





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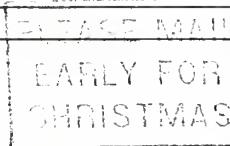
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